

1. $\vec{F} = \alpha \left(\frac{1}{x^2} \hat{i} + \frac{1}{y^2} \hat{j} \right)$

$$U(x) = \frac{c}{k} (\cos kx - 1)$$

2.

a) At rest: @ A, F

b) Zero force: @ B, D, E

c) largest K: @ B

d) force to the left: @ F, C
force to the right: @ A

3.
$$H = \frac{BL + \frac{1}{3} CL^3}{Mg - B \cot \theta}$$

4.

$$F_r = \frac{12a}{r^{13}} - \frac{6b}{r^7}$$

$$\underline{r_{eq} = \left(\frac{2a}{b} \right)^{1/6}}$$

$$\Delta E = \frac{b^2}{4a}$$